

ASARCO

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EAST HELENA PLANT

J. B. Davis
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Key Words/Comments: Asarco's formal
comments concerning pro-
posed plan for Process Ponds.

September 20, 1989

Copies to:
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Mr. D. Scott Brown
Remedial Project Manager
U.S. Environmental Protection Agency
Montana Operations Office
Federal Building - Drawer 10096
301 S. Park
Helena, Montana 59626-0096

RE: Comments to the Superfund Program Proposed Plan -
East Helena Smelter Site - August 1989

Dear Scott:

The U.S. Environmental Protection Agency has made a preliminary recommendation for remedial alternatives at the four process ponds located at the East Helena smelter site in the Proposed Plan dated August 1989. Asarco is providing these comments on EPA's Proposed Plan during the public comment period which closes on September 20, 1989. By providing these technical comments, Asarco does not waive, and reserves the right to comment on additional issues, including, but not limited to, those related to procedural or legal aspects of this Proposed Plan.

Asarco believes that EPA's Proposed Plan's basic concepts represent the most practical alternatives for protection of human health and the environment. However, Asarco objects to some of the technical issues related to methodology, timing, and implementation. The objections are primarily due to changes made by EPA in the Proposed Plan that differ from the Process Pond Remedial Investigation/Feasibility Study (Process Pond RI/FS). These focus on: 1) technical methods for in-place treatment of process fluids in Lower Lake; 2) practical aspects of retaining the speiss granulating pond for emergency overflow and of excavating soils in the acid plant water treatment area; and 3) implementation time for smelting the soils and sediments removed from each process pond area. The following comments are meant to complement previous statements by Asarco representatives at the September 12, 1989 public meeting.

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IN-PLACE TREATMENT OF PROCESS FLUIDS IN LOWER LAKE

In-situ treatment is Asarco's preferred alternative for treatment of Lower Lake waters. The advantages of in-place treatment are lower costs, simplicity, on-site treatment, and reduction of risk to the environment. This is a viable alternative since the technical feasibility has been demonstrated on a laboratory scale by the U.S. Bureau of Mines and Montana College of Mineral Science and Technology (Montana Tech).

The U.S. Bureau of Mines conducted treatment tests on Lower Lake water using ferric chloride to co-precipitate ferric arsenate. Results of treatment tests using ferric chloride showed arsenic concentrations of Lower Lake waters could be reduced to below drinking water standards.

Treatability tests of Lower Lake water conducted at Montana Tech examined the removal of arsenic by co-precipitation as mimitite, a lead chloroarsenate mineral. Concentrations of arsenic below drinking water standards also was achieved using lead chloride.

Asarco will conduct a pilot scale field test to prove the feasibility of in-situ treatment of Lower Lake process water. Tests will be conducted to examine the effectiveness of treatment in the field using ferric chloride. Ferric chloride has been selected because it is commonly used for arsenic treatment, has lower potential environmental impacts than lead chloride, and is lower in cost than lead chloride.

Pilot scale field testing will consist of the following steps:

1. Laboratory bench scale testing will be conducted to examine the most efficient and effective treatment for arsenic removal. This testing will refine results obtained by the U.S. Bureau of Mines and will be designed to develop specific procedures for pilot scale testing. Bench scale testing will be conducted using procedures described in the Treatability Testing Work Plan for the Comprehensive Feasibility Study (Hydrometrics 1989).
2. Based on information obtained by additional bench scale testing, a Pilot Scale Treatability Testing Work Plan for In-Situ Treatment of Lower Lake will be developed using the format suggested in the most recent EPA RI/FS guidance (October 1988). Using the procedures developed in the work plan, field treatability tests will be conducted on Lower Lake waters. In order to avoid potential contamination of the isolated test area, the pilot scale test will be conducted in one of the RCRA tanks being constructed for the speiss pond or for Lower Lake. Use of one of these tanks filled with Lower Lake water will allow pilot testing to be

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conducted in a controlled environment while still allowing examination of the effectiveness of treatment techniques on a large scale. Pilot testing is expected to be conducted in late October or November 1989 when construction of the tanks is completed and the testing procedure has been developed.

3. Upon completion of the pilot tests, full scale in-situ treatment of the Lower Lake waters can be conducted according to a schedule approved by EPA and the State of Montana.

RETAIN SPEISS GRANULATING POND FOR EMERGENCY OVERFLOW

The design for the speiss granulating area improvements have incorporated the use of a RCRA-type tank for isolating the speiss granulating process fluids from underlying soils, although the materials contained in the tank are not hazardous wastes and do not need to be handled in compliance with RCRA. The RCRA-type tank will be comprised of a steel tank with a liner, leak detection system, secondary containment, and recovery capability. This tank will replace the existing speiss granulating pond as the major process water holding facility. The design of the tank's water level indicators will utilize state-of-the-art technology to ensure that this tank will not be overfilled. This same technology has been provided to similar such tanks used at the plant. As additional protection against the possibility of overfilling the tank, Asarco has integrated the use of the existing speiss granulating pond for emergency overflow in the event of a system malfunction. The existing speiss granulating pond, which has been previously lined with a 160 HDPE liner, will remain dry during typical operations. Only if a malfunction occurred would the existing speiss granulating pond serve as a fail-safe by providing additional holding capacity. Once the malfunction was corrected, the water would be removed from the existing speiss granulating pond to the new tank.

Although the soils under the existing pond would remain, the potential for groundwater impacts from these soils is negligible. Since no fluids, rainfall, or other liquids would be able to percolate through the impermeable geomembrane liner, there is no mechanism to leach metals from underlying soils.

EXCAVATING SOILS IN THE ACID PLANT WATER TREATMENT FACILITY

EPA's preferred alternative for the acid plant water treatment facility calls for excavation of underlying and adjacent soils within the existing settling basins and sediment drying area. Depth of soil excavation in EPA's preferred alternative is proposed to take place down to the coarse, groundwater-bearing gravels (20-22 feet), if practical. Asarco believes that the

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depth of excavation must be governed by practical limits, which are likely to limit excavation to less than 20 feet. Practical limitations include the depth to which normal excavating equipment can reach to effectively excavate soils. In addition, considerations such as the structural integrity of acid plant building foundations and structures must be factored into any determination of the practical limits of excavation.

IMPLEMENTATION TIME FOR REPLACEMENT OF THE SPEISS GRANULATION PIT

EPA's preferred alternative for the speiss granulation pit and pond requires replacement of the speiss granulation pit within a two-year period. Asarco agrees with the proposed speiss granulation pit preferred alternative but the plan cannot be implemented in the two-year period. Major renovations to the dross reverberatory operation, including replacement of the dross reverberatory furnace are scheduled to occur in 1992. As part of this replacement project, the existing speiss granulating pit will be dismantled and replaced with a new, leak-proof facility. The replacement of the speiss granulation pit would best be accomplished through the coordination of the dross reverberatory furnace renovation project so that production downtime is minimized, construction equipment and manpower needs are maximized and capital resources are best utilized. In order to avoid duplicating efforts between EPA's preferred alternative and this previously scheduled plant renovation project, Asarco recommends that the speiss granulation pit replacement project take place in 1992.

SMELTING EXCAVATED SOILS AND SEDIMENTS

Each of EPA's preferred alternatives for the four process ponds involves, to varying degrees, excavation of either soils surrounding or beneath the process ponds (acid plant water treatment facility and speiss granulating pit and pond) or removal of accumulated sediments from former or existing lakes (former Thornock Lake and Lower Lake) and then smelting these materials as part of the current operation. The projected quantity of all these excavated materials, including removal of the proposed two-foot buffer zone at Lower Lake, is estimated to exceed 50,000 tons.

The normal unit capacity (that quantity of material which can be placed through the smelting operation for the East Helena smelter) averages 20,000 tons per month. The projected quantity of excavated material of 50,000 tons therefore represents a little more than 20% of the smelter's annual capacity. Because of the low concentration of expected recoverable metals in the excavated material, the material is considered "dead charge".

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For each ton of dead charge sent through the smelting process, a proportional metal loss results. The production engineers have calculated the quantity of dead charge which can be smelted while still maintaining adequate smelting performance. The quantity of dead charge must not exceed 0.5% of the total charge. Any quantity in excess of 0.5% has historically presented major disruptions in operations by producing blast furnace upsets which, in turn, have often created air quality problems. The quantity of 0.5% of the total charge equates to about 100 tons per month. At this rate of 100 TPM, the total excavated soil will take 500 months, or a little over 41 years, to process.

Asarco has examined the quantity of material which is proposed to be excavated and the amount of time which will be necessary to smelt this excavated material using the figures and calculations discussed above.

EPA's Proposed Plan recommends the removal of Lower Lake artificially-deposited sludge, plus a two-foot "safety margin" of underlying natural stratigraphic sediments. This proposal differs from the feasibility study report which assumes removal of the artificially-deposited sludge plus removal of one foot of underlying natural strata.

Removal of the additional foot of underlying natural strata is an arbitrary decision and is not based on a technical analysis or evaluation to determine if there is increased "safety" in removing an additional foot of natural strata. Concentrations of leachate from samples of the underlying natural strata not only pass the EP toxicity test, but are below primary drinking water standards. Removal of the extra one foot of sediment will require increasing the sediment drying area by 25%, smelting an additional 7,000 tons of sediment, an increase in cost of about a half-million dollars, and an additional eight years of smelting time. Asarco does not believe the removal of additional material has been technically justified by EPA and does not result in increased benefit to the environment.

EPA's Proposed Plan also recommends the removal of sediment to a depth of 18 to 20 feet, if practical, in the area of the acid plant water treatment facility. The Process Pond RI/FS report also considers removing the upper five feet of sediments only (those sediments which contained the highest concentrations of metals) and capping or paving the surface to prevent downward percolation of water through underlying sediment. It is apparent that if downward percolation of water is not permitted, there is no mechanism for the mobilization of metals in sediments underlying the acid plant area. Capping or paving the acid plant area would accomplish as much protection for the groundwater as removing the sediments. The potential environmental impact from sediments is insignificant compared to the process fluids, which

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are the major sources of arsenic to groundwater. The cost difference between deep excavation included in EPA's Proposed Plan and shallow soil excavation and capping or paving included in the Process Pond RI/FS report is over a factor of 2 (about 2.4 million dollars versus 1 million dollars). Asarco believes no real benefit is obtained by deep excavation and the smelting of these sediments is not justified.

EPA's Proposed Plan recommends removal of sediment to the speiss pond and pit area to 20 feet, if practical. Results of leachate tests conducted on sediment samples near the speiss pond indicate concentrations of metals and arsenic in sediment leachate are below levels that are considered EP toxic. Arsenic and metals concentrations in leachate from sediment samples from depths of 6 to 20 feet were below drinking water standards. Based on these leachate test results, the feasibility study considered excavation and smelting of the upper six feet of sediments with the highest metals concentration underlying the speiss pond and pit.

Similar to all process ponds, sediments are insignificant in comparison to the process fluids, which are the major sources of arsenic to groundwater. Once all sources of fluids are contained, and percolation of fluids is prevented by installation of leak proof facilities and capping areas adjacent to the speiss pond and pit, there is no vehicle for mobilization of metals in unsaturated sediment.

The cost difference between deep excavation, as recommended in EPA's Proposed Plan, and excavation and smelting of the upper six feet is over a factor of 3 (about 460,000 dollars versus 139,000 dollars). Although deep excavation has already been implemented on soils underlying the area of the speiss pond replacement tank, Asarco believes no significant benefit has been obtained and additional costs associated with deep excavation and time required for smelting are not justified.

Soils which are scheduled to be excavated from the acid plant water treatment facility and soils which have already been excavated from the speiss granulation area contain gravels, cobbles, and, in some instances, large boulders. These large materials would certainly require special handling and smelting considerations not typically encountered with ore concentrate. These materials (providing they meet maximum size requirements) would need to be crushed prior to smelting, which would require substantial amounts of time. Asarco believes that it is unnecessary to smelt these large materials. They should be separated, washed, and stored on site, thus reducing the amount of time required for smelting the fine grain materials. Additionally, the fine grain material would be enriched as a result of removing the cobble and boulders which have no metal

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value. This procedure will, therefore, present no adverse impact to the environment.

Asarco believes that if all of the above proposals could be implemented, the smelting time could be reduced by 20 years. If all of these proposals to modify the necessary time to smelt materials are not accepted, other alternatives presented in the Process Pond RI/FS report will need to be considered, including on-site landfilling.

Although each of these comments have previously been discussed with you on several occasions, I invite you to meet with Bob Miller and me so that any questions may be addressed.

Sincerely,

A handwritten signature in cursive script that reads "Jon C. Nickel".

Jon C. Nickel
Industrial Quality Manager

JCN:ps

cc: Greg Mullen
Sandra Moreno
Tom Eggert
Cindy Leap
Bob Miller